

CONTAINER

Background of the Invention

The present invention relates to a container particularly but not exclusively for containing food, whose lid engages with the container body
5 against accidental opening.

Containers of this type in general have been known, such as the one as disclosed in US Patent No. 4,915,291 and shown in Figures 10 and 11 of the accompany drawings. This container essentially has an upright tubular body 1, of given cross-section, provided with outwardly turned
10 edges 2. With the tubular body 1, two box-like lids 3 and 3' cooperate, having mating cross-sections, and provided with inwardly turned edges 4 and adapted to close respective top and bottom ends of the body 1.

The lids 3 of this container are secure and cannot be removed without destruction. Despite of the secure disposition, the lids 3 are not
15 sealingly engaged with the body 1, and this makes the container unsuitable for containing matter that can leak such as powder or liquid.

The invention seeks to mitigate or at least alleviate such a drawback by providing an improved container.

Summary of the Invention

20 According to the invention, there is provided a container comprising a body and a lid for closing an opening of the body. The body has a base and a peripheral wall upstanding therefrom to define a receptacle. The peripheral wall defines the opening which has a circumferential edge portion that turns outwardly along its entire length to have a first
25 cross-section. The lid has a circumferential edge portion that turns downwardly along its entire length to have a second cross-section complementary in shape to and for enclosing the first cross-section for surface sealing engagement therewith. The lid edge portion includes at least two flaps on different sides of the lid, which are foldable inwardly and

upwardly to be resiliently self-expanding for bearing resiliently at an acute angle against an outer surface of the body wall to thereby maintain the sealing engagement, with the lid edge portion forming a gap with the body wall outer surface across which the flaps extend.

5 Preferably, the body wall is inclined from bottom to top at an acute angle outwardly.

 It is preferred that the gap has a width and the flaps have a dimension measured from the lid edge portion that is larger than the width of the gap such that the flaps are resiliently flippable outwardly through an
10 over-center action while bearing against the body wall outer surface upon removal of the lid from the body.

 It is further preferred that the body wall is inclined from bottom to top at an acute angle outwardly.

 In a preferred embodiment, the lid edge portion turns upwardly along
15 its entire length before turning downwardly to thereby form an annular rib including the second cross-section.

 More preferably, the annular rib includes an inner side that has a profile complementary in shape to that of a top part of an inner surface of the body wall for surface sealing engagement therewith.

20 More preferably, the lid edge portion turns downwardly along its entire length before turning upwardly to adjoin the annular rib, thereby forming an annular groove immediately within the annular rib.

 It is preferred that the flaps are integrally connected to the lid edge portion along fold lines such that the flaps are readily foldable.

25 Preferably, the body wall outer surface has a relatively rough surface texture for frictional engagement by the flaps.

 More preferably, the body is molded from paper pulp.

 Further more preferably, the lid is also molded from paper pulp.

Brief Description of the Drawings

The present invention may be better understood and its numerous objects and advantages will become apparent to those skilled in the art by reference to the accompanying drawings in which:

5 Figure 1 is a top perspective view of an embodiment of a container in accordance with the invention, which has a body and lid for closing the body;

 Figure 2 is an exploded perspective view of the container of Figure 1, showing its body and lid separately;

10 Figure 3 is a top plan view of the body of Figure 2;

 Figure 4 is a cross-sectional side view of the body of Figure 3, taking along line IV-IV;

 Figure 5 is another cross-sectional side view of the body of Figure 3, taking along line V-V;

15 Figure 6 is a top plan view of the lid of Figure 2;

 Figure 7 is a cross-sectional side view of the lid of Figure 6, taking along line VII-VII;

 Figure 8 is another cross-sectional side view of the lid of Figure 6, taking along line VIII-VIII;

20 Figure 9 is a fragmentary cross-sectional side view of the container of Figure 1, illustrating inter-engagement between the lid and the body;

 Figure 10 is a perspective view of a prior art container, which has a body and top and bottom lids closing the body; and

25 Figure 11 is a cross-sectional side view of the container of Figure 10, illustrating inter-engagement between the lids and the body.

Detailed Description of the Preferred Embodiment

Referring to Figures 1 to 9 of the drawings, there is shown a container 10 embodying the invention, which container 10 comprises a body 100 having a top opening and a separate lid 200 for closing the opening of the body 100. The body 100 and the lid 200 are both molded from virgin paper pulp for example. The body 100 has a generally square base 110 and a four-sided peripheral wall 120 upstanding integrally therefrom, while gradually expanding, to define a receptacle for containing matter such as food and in particular food with liquid content (i.e. juice, sauce or soup) or mere liquid. The peripheral wall 120 is inclined slightly outwards from bottom to top at an acute angle of about 15°.

The body wall 120 defines the opening that has a circumferential edge portion 122 which turns outwardly along its entire length or periphery to have a cross-section 122C. More specifically, the body edge portion 122 is smoothly curved outwardly and then slightly downwardly such that the cross-section 122C has a relatively shallow inverted U-shape.

The lid 200 is of a generally square shape, having a central panel 210 and an integrally connected peripheral portion 220 surrounding the panel 210. The peripheral portion 220 has a circumferential edge portion 222 that turns upwardly and then downwardly along its entire length to form a hollow annular rib 222R of a second cross-section 222C for enclosing the first cross-section 122C of the body edge portion 122. The second cross-section 222C has a relatively deep inverted U-shape including an upper part that is complementary in shape to and matches with the first cross-section 122C for surface sealing engagement therewith.

The circumferential rib 222R of the lid 200 has opposite inner and outer sides slightly diverging downwardly. The rib's inner side has a profile complementary in shape to that of the top part of an inner surface 120A of the body wall 120 for surface sealing engagement therewith. Downwardly, the rib's outer side is slightly taller than the rib's inner side and extends

beyond the body edge portion 122 to form an annular gap 223 with and around an outer surface 120B of the body wall 120.

As between the central panel 210 and the circumferential rib 222R, the peripheral portion 220 turns initially downwardly along its entire length from the panel 210 and then outwardly before turning upwardly to adjoin the rib 222R, thereby forming an annular groove 224G immediately within the annular rib 222R. The presence of the groove 224G allows the adjacent inner side of the rib 222R to extend relatively deeper into the container body 100. This enlarges the area of sealing engagement of the lid edge portion 222 with the body edge portion 122 downwardly from the top of the inner surface 120A of the body wall 120, whereby the lid 200 can seal more effectively with the body 100 against leakage of liquid content.

The lid edge portion 222 includes four flaps (or tabs) 226 on respective opposite sides of the lid 200, which are integrally connected to the lid edge portion 222 along respective weakened fold lines 225 formed by, for example, punched slots or pressed dashes or simply a pre-formed crease such that the flaps 226 are readily foldable about these lines 225. Before the lid 200 is used, the flaps 226 should first be folded about the lines 225 inwardly and upwardly into the rib 222R, thereby providing respective hooks (or clasps) 226H. By reason of the integral connection along the fold lines 225, the in-turned hooks 226H are resiliently self-expanding.

The upward angular disposition of the hooks 226H enables easy placement of the lid 200 onto the body 100. When the lid 200 closes upon the body opening, the hooks 226H of the lid 200 are pressed to contract through pivoting about their fold lines 225 upon hitting the edge portion 122 of the body 100, thereby giving way to the body edge portion 122 which is then sealingly engaged by the lid edge portion 222. As soon as the hooks 226H are lowered past the body edge portion 122, they immediately flip back and expand by resiliency and thus bear with their distal ends/edges

upwardly resiliently against the inclined outer surface 120B of the body wall 120 at positions below and inwardly of the body edge portion 122.

In such a closed condition of the container 10, the hooks 226H extend at an acute angle (about 45°) inwardly and upwardly across the gap 223. Given that the body wall outer surface 120B is inclined outwardly (and downwardly), the hooks 226H act at an acute angle upon and bear against the inclined wall surface 120B to thereby encourage and maintain the sealing engagement between the lid 200 and the body 100, counteracting removal of the lid 200 from the body 100. In this regard, the wall surface 120B is made to have a relatively rough surface texture for frictional engagement by the hooks 226H.

The lid 200 can easily be opened by being pulled, conveniently at one corner or on one side thereof, upwardly away from the body 100. In this regard, the gap 223 has a width G and the hooks 226H have a dimension H measured from the lid edge portion 222 that is larger than the gap width G. Thus, upon lifting of the lid 200 from the body 100, the hooks 226H are resiliently flippable downwardly and outwardly through an over-center action, with their distal ends/edges continuing to grip the body wall outer surface 120B for the time being, to thereby release the body 100. By over-center action, the hooks 226H pivot past a "center" angular position at which compression of the hooks 226H maximizes.

It is envisaged that the subject container 10 can be designed to have any other suitable shapes, for example including a generally rectangular, triangular or circular base. The number of sides of the container body wall 120 is not restricted, nor is the number of flaps/hooks 226H. Thus, in the case of a three-sided container body 100, the associated lid 200 may have only two flaps 226H (instead of three) on different i.e. adjacent (rather than opposite) sides.

While preferred embodiments have been shown and described, various modifications and substitutions may be made thereto without

departing from the spirit and scope of the invention. Accordingly, it is to be understood that the present invention has been described by way of illustration and not limitation.